XXVI.—*On a Doubling of the Central Tail-feathers in a Bird-of-Paradise.* By Dr. J. A. Bierens de Haan (Amsterdam).

(Text-figures 1 & 2.)

Half a century ago Von Rosenberg wrote in the Nat. Tijdschr. voor Ned. Indië, xxix. 1867, that as a rare exception males of *Paradisea apoda* were found with three, instead of two, wiry median rectrices. Such males would be called "Radjahs" or Kings of the Paradise-Birds by the natives of the Aru Islands. Rosenberg succeeded in capturing such a specimen. It was sent to Leyden, and afterwards described by Schlegel (in the 'Muséum d'Hist. nat. des Pays-Bas,' 1867) as a "variété très curieuse."

However, the matter did not attract much attention. Neither Elliot nor Sharpe mentioned it in their Monographs on the Birds-of-Paradise; Salvadori alone refers to it in his 'Ornithologia della Papuasia' (1881), but remarks that he cannot suppress the suspicion "che si tratti di cosa artificiale."

In the Zoological collections of the "Handelsmuseum van het Koloniaal Instituut" at Amsterdam (the former Colonial Museum at Haarlem) I found a mounted male specimen of the small Bird of-Paradise (*P. minor*) that showed an abnormality of the same kind. The tail, that has normally 12 feathers, here had 14, of which 4, instead of the normal 2, were produced into the well-known thread-feathers. That the case was not an artificial one was clearly visible on a more exact examination of the insertion of those feathers. In fig. 1 the normal insertion of the tail-feathers is shown after removing the coverts. The ten normal rectrices (r) appear on the same level on both sides; the two central thread-feathers (r') with their white shafts arise on a higher level from a knob (k), and are surrounded for a short distance by a kind of horny cover (h) as a continuation of that knob. In fig. 2 the insertion in the abnormal case is shown. The knob (k'), from which the four wiry feathers

arise, is here twice as broad as in the normal case (resp. 5 and 10 mm.). The outer thread-feathers (*r''*) therefrom partially cover the inner normal rectrices. Only the inner thread-feathers are surrounded by the horny cover (*h*); the

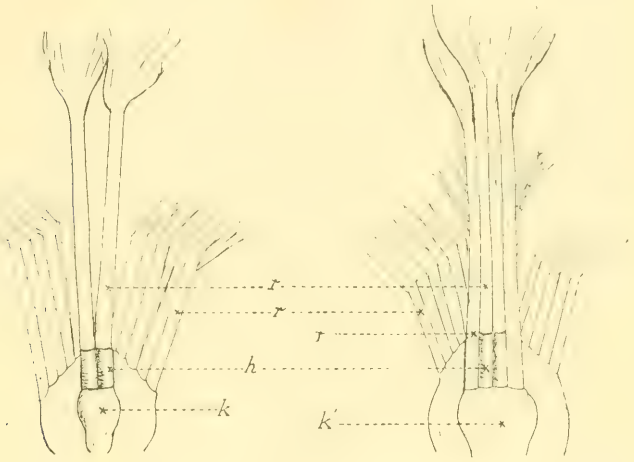

Fig 1 Fig 2

Fig. 1. Insertion of the tail-feathers in a normal case (somewhat diagrammatic).
r, normal tail-feathers; *r'*, thread-feathers; *k*, knob from which thread-feathers arise; *h*, horny cover of thread-feathers.

Fig. 2. Insertion in the abnormal case.
r', normal thread-feathers; *r''*, supernumerary ones; *k'*, enlarged knob.

shafts of the outer ones are less white, and nearer to their base they are provided with small webs. The outer two thread-feathers are a little shorter than normal (viz. 48 cm.), the inner ones are of normal length (50 cm.). It therefore seems clear that the outer are to be looked upon as the supernumerary ones.

Dr. Van Oort was so kind as to show me the Leyden specimen mentioned above. Here there was only one supernumerary feather, and this seemed to arise out of the same

cover as one of the two normal. Perhaps there is some reason for scepticism about the naturalness of the origin in this case.

How is such an abnormality to be explained? We do not gain very much by using the word "atavism" (although we could mention birds with more than twelve tail-feathers), because undoubtedly the thread form of the inner feathers is a character newly acquired in the family Paradiseidæ. Of course we do not know whether the abnormality is hereditary (as, for instance, polydactyly). It might be supposed that the enlarged number of thread-feathers was only the result of an abnormal or incomplete moulting, and therefore an accidental and individual deviation. The insertion of the feathers in the doubled knob, however, make, as it seems to me, this hypothesis highly improbable. The case is somewhat more complicated by the symmetry of the doubling and the inequality of the normal and supernumerary thread-feathers on each side. Like other authors on this subject, I am of the opinion that in similar cases of doubling, not easily explained by external influences, we recall the vegetative mode of division, so largely spread in lower animals, revived, perhaps, after a damage at an embryonic stage. Regarding the question, whether such a vegetative augmentation of the number of rectrices be not a very rare exception, we must keep in mind that with birds with equal tail-feathers such an abnormal increase will not often be detected.

In reference to the above paper, Lord Rothschild wishes to remark that the duplication of the central pair of rectrices in the Paradiseidæ is not so rare as supposed. Besides several previous records in the literature from various sources, he wishes to say that the Tring Museum possesses a skin of *Diphyllodes magnifica* with four fully-developed central rectrices.